

Large Scale Demonstration and Deployment Project (LSDDP)

Fact Sheet

Los Alamos National Laboratory Tritium Technology Deployment

In Partnership With The Office of Science and Technology (EM-50)

Introduction

Beginning in FY2002, Los Alamos National Laboratory (LANL) will host a large-scale demonstration and deployment project (LSDDP) focused on the safe and cost-effective decontamination and decommissioning (D&D) of tritium facilities. As part of ongoing D&D efforts, LANL will demonstrate improved technologies that have the potential to reduce costs, shorten schedules, enhance safety, and can be used across the DOE complex.

The Tritium Systems Test Assembly (TSTA) presently has a tritium inventory of approximately 130 grams, which is the focus of the current stabilization activities. The stabilization work must be carried out using LANL Integrated Safety Management and comply with all DOE regulations for a Category 2 nuclear facility. LANL is planning to downgrade the facility to a Radiological Facility after the tritium is removed. Such a change will significantly lower the mortgage costs and, thus, expedite the closure activities. Tritium in the TSTA is mainly in four forms: 1) Gas in 50-liter tanks (about 20 tanks with about 40 grams tritium), 2) A solid absorbed on metal hydride beds (11 beds containing about 40 grams tritium and containing 50 kilograms of depleted uranium), 3) Water on molecular sieve "moisture collectors" (currently about 40 containers holding 40 grams tritium) and 4) "Holdup" in high surface area component (5-20 grams).

Most of the tritium at TSTA is mixed with other hydrogen isotopes. In some cases it may contain impurities such as helium and tritiated hydrocarbons. The free gas and tritium in hydride forms will be transferred to two or three titanium hydride beds and shipped to the Savannah River Site (SRS). The moisture collectors and

contaminated high-surface-area components will be buried as waste at the LANL TA-54 waste disposal site.

Objective

The objective of the LANL tritium technology deployment LSDDP is reduction of cost, risk and schedule for the deactivation; decontamination and decommissioning of DOE's tritium facilities through the deployment of previously demonstrated, cost-effective, innovative technologies. It is the goal of the LSDDP to identify and select over 20 technologies that can be deployed at multiple sites. At LANL, leveragable funding of \$6.6 million is available over two years of the project. Leveragable funding from other sites is expected as well.

The primary deployment site for this LSDDP will be the LANL TSTA, an existing facility that is



being stabilized by the current DOE program operator, the Office of Fusion Energy Science (OFES), in anticipation of transfer to DOE-EM for D&D. The main experimental building is a 3,700 square foot high bay that contains process equipment and gloveboxes for fusion tritium research and development.



The LSDDP will be managed by an Integrating Contractor Team consisting of LANL, IT Corporation, and representatives from SRS, Princeton Plasma Physics Laboratory (PPPL), and Lawrence Livermore National Laboratory (LLNL). Providing support to the LSDDP will be Florida International University-Hemispheric Center for Environmental Technology (FIU-HCET) and WPI. In addition, the Japan Atomic Energy Research Institute (JAERI) and the Joint European Torus (JET) are expected to participate.

Technical Needs

The following is a summary of TSTA technology needs that this LSDDP will address:

- Waste Handling
- Contaminated Water and Oils
- Solids, Surface and Bulk Characterization
- Dismantlement

- Personal Protective Equipment
- Gas Detritiation
- Monitoring
- Decontamination
- Long-Term Surveillance and Maintenance

Other DOE sites that have similar problems and expressed their interest in deploying technologies from this project include SRS, PPPL, the Mound Site, and LLNL.

Current Status

On August 9-10, the LANL Tritium Facilities LSDDP management team conducted the project kick-off meeting at LANL. The kick-off meeting concluded with a tour of the Tritium Systems Test Assembly facilities at LANL. During the meeting, the organizational structure for the project was finalized.

<http://www-emtd.lanl.gov/TD/Technology.html>

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